## REMARKS

Applicant respectfully requests further examination and reconsideration in view of the instant response. Claims 1-24 remain pending in the case. Claims 1-24 are rejected.

Applicant wishes to point out to the Examiner that the basis for the rejection of Claims 10 and 19 may not be proper. Specifically, Claim 10 depends on independent Claim 8 and Claim 19 depends on independent Claim 17. The basis for the rejection of Claims 8 and 17 is the combination of Ohran in view of Schutzman, and is described in Section 3 of the Detailed Action. However, the basis for the rejection of Claims 10 and 19 is the combination of Schutzman, Duyanovich and Beardsley, and is described in Section 4 of the Detailed Action. Moreover, under Section 4, the discussion of the rejection of Claims 10 and 19 is described with regard to the combination of Schutzman and Ohran, and presumably Beardsley.

For purposes of the current response, in an effort to respond to the Examiner's rejections, Applicant has assumed that the rejection of Claims 10 and 19 is based on the combination of Ohran, Schutzman and Beardsley. Applicant requests that the Examiner clarify the rejection of Claims 10 and 19 in the next Office Action, if necessary.

## 35 U.S.C. §103(a)

Claims 1, 2, 7, 12, 14, 15, 20 and 21 stand rejected under 35 U.S.C.
§103(a) as being unpatentable over United States Patent 6,505,216 by
Schutzman et al., hereinafter referred to as the "Schutzman" reference, in view
of United States Patent 5,555,371 by Duyanovich et al., hereinafter referred to
as the "Duyanovich" reference. Applicant has reviewed the cited references
and respectfully submits that the embodiments of the present invention as
recited in Claims 1, 2, 7, 12, 14, 15, 20 and 21 are not unpatentable over
Schutzman in view of Duyanovich for the following rationale.

Applicant respectfully directs the Examiner to independent Claim 1 that
recites that an embodiment of the present invention is directed to (emphasis
added):

> A method of archiving a database, comprising the steps of:
> storing a plurality of archive logs comprising a plurality of
> transactions on an operational database;
> <u>transmitting a plurality of asynchronous streams to a
> backup database wherein a first asynchronous stream of said
> plurality of asynchronous streams is transmitted at a first
> transmission rate and a second asynchronous stream of said
> plurality of asynchronous streams is transmitted at a second
> transmission rate,</u> wherein the plurality of asynchronous streams
> correspond to a plurality of archive logs, and wherein the plurality
> of asynchronous streams are transmitted simultaneously; and
> updating the backup database with the plurality of
> transactions.

Independent Claims 12, 14 and 20 recite similar limitations. Claims 2 and 7
that depend from independent Claim 1, Claim 15 that depends from

independent Claim 14, and Claim 21 that depends from independent Claim 20 provide further recitations of features of the present invention.

Applicant respectfully asserts that Schutzman and embodiments of the claimed invention are very different. Applicant understands Schutzman to teach a method and apparatus for backing-up and restoring files using multiple trails. In particular, Schutzman teaches that the multiple trails are operable to backup the files synchronously.

Schutzman teaches a backup and restore system that can use separate data trails or data streams for concurrent transfer of different data portions (col. 11, lines 27-25). With reference to Figure 3, the multi-trail backup system of Schutzman is explicitly shown. In particular, the multi-trail backup system of Schutzman can transfer different data portions (120-1 through 120-3) between storage devices (116-1 through 116-K) and respective backup devices (114-1 through 114-L) over the same time period (col. 14, lines 24-28). In other words, the different trails are transmitted to backup devices synchronously, as they are transmitted over the same period of time.

In contrast, embodiments of the claimed invention are directed towards a method of archiving a database wherein a plurality of asynchronous streams are transmitted simultaneously to a backup database, as claimed. In particular, a first asynchronous stream of the plurality of asynchronous streams

is transmitted at a first transmission rate and a second asynchronous stream of the plurality of asynchronous streams is transmitted at a second transmission rate.

As described in the present specification, "rather than queuing logs to be sent sequentially whereby one archive log is sent and then waiting for that transfer to complete before the next archive log can be sent, the present invention prepares the archive logs such that multiple archive logs can be transferred simultaneously" (page 8, lines 14-18). Transmitting the multiple streams simultaneously (e.g., at the same time) and asynchronously (e.g., at different rates) facilitates the expeditious recovery of the backup process.

Applicant respectfully asserts that Schutzman in particular does not teach, disclose, or suggest transmitting a plurality of asynchronous streams to a backup database, as clamed. On the contrary, by teaching that the data portions are transmitted to the backup devices over the same time period, Applicant understands that the update log records of Schutzman are transmitted synchronously, and that Schutzman thus teaches away from the present invention as claimed.

Moreover, Applicant understands Schutzman to teach a method and apparatus for backing-up and restoring files using multiple trails wherein each trail corresponds to a particular pair of storage devices and backup devices. In

particular, Schutzman teaches that each storage device and corresponding backup device has a single corresponding trail.

With reference to Figures 1 and 3, Schutzman teaches that each storage device 116-1 through 116-K has a respective backup devices 114-1 through 114-L. In particular, data portion 120-1 is transferred between storage device 116-1 and backup device 114-1, data portion 120-2 is transferred between storage device 116-2 and backup device 114-2, and data portion 120-3 is transferred between storage device 116-K and backup device 114-L (col. 11, lines 10-23 and lines 56-63; col. 14, lines 24-28). Specifically, each storage device and backup device only receives a data portion over one stream.

In contrast, embodiments of the claimed invention are directed towards a method of archiving a database wherein <u>a plurality of asynchronous streams</u> are transmitted simultaneously to <u>a backup database,</u> as claimed. As described in the present specification, an archive log is transferred from a host operational database to a backup database in the form of multiple asynchronous streams (page 8, lines 2-3 and 12-14). In other words, both the host operational database to and the backup database receive data over multiple streams.

Applicant respectfully asserts that Schutzman in particular does not teach, disclose, or suggest transmitting a <u>plurality of asynchronous streams</u> to

a backup database, as clamed. On the contrary, by teaching that one data portion is transmitted between one storage device and one backup device, Schutzman thus teaches away from the present invention as claimed.

Moreover, the combination of Schutzman and Duyanovich fails to teach or suggest this claim limitation because Duyanovich does not overcome the shortcomings of Schutzman. Duyanovich, alone or in combination with Schutzman, does not teach, disclose, or suggest transmitting a plurality of asynchronous streams to a backup database, as clamed. As described above, Schutzman teaches a system where multiple streams are synchronously transferred between corresponding pairs of storage devices and backup devices.

Applicant understands Duyanovich to teach data backup copying with delayed directory updating. In particular, Duyanovich does not teach, disclose, or suggest transmitting a plurality of asynchronous streams to a backup database, as clamed. In contrast, Duyanovich recites the undesirability of the use of asynchronous data transmissions. Specifically, Duyanovich recites that "[u]pdating directories and real data-storage devices based on asynchronous data transmissions is not desired because the sequence of the primary system/site updating is not preserved" (emphasis added). By teaching that the use of asynchronous data transmissions is not desired, Duyanovich teaches away from the present invention as claimed.

Applicant respectfully asserts that nowhere does the combination of Schutzman and Duyanovich teach, disclose or suggest the present invention as recited in independent Claims 1, 12, 14 and 20, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Schutzman and Duyanovich also does not teach or suggest the additional claimed features of the present invention as recited in Claims 2 and 7 dependant on allowable base Claim 1, Claim 15 dependant on allowable base Claim 14, and Claim 21 dependant on allowable base Claim 20. Therefore, Applicant respectfully submits that Claims 2, 7, 15 and 21 overcome the rejection under 35 U.S.C. § 103(a), and are in a condition for allowance as being dependent on allowable base claims.

Claims 3, 4, 6, 13, 16 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Schutzman in view of Duyanovich, and further in view of United States Patent 6,304,980 by Beardsley et al., hereinafter referred to as the "Beardsley" reference. Claims 3, 4 and 6 are dependent on independent Claim 1, Claim 13 is dependent on independent Claim 12, Claim 16 is dependent on independent Claim 14, and Claim 22 is dependent on independent Claim 20. Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claims 3, 4, 6, 13, 16 and 22 are not unpatentable over Schutzman in view of Duyanovich, further in view of Beardsley, for the following rationale.

Applicant respectfully asserts that the combination of Schutzman, Duyanovich and Beardsley does not teach, describe or suggest the invention as claimed. As described above, Schutzman teaches a system where multiple streams are synchronously transferred between corresponding pairs of storage devices and backup devices and Duyanovich teaches the undesirability of the use of asynchronous data transmissions.

Moreover, the combination of Schutzman, Duyanovich and Beardsley fails to teach or suggest this claim limitation because Beardsley does not overcome the shortcomings of Schutzman and/or Duyanovich. Beardsley, alone or in combination with Schutzman and Duyanovich, does not teach, disclose, or suggest transmitting a plurality of asynchronous streams to a backup database, as clamed. Applicant understands Beardsley to teach a peer-to-peer backup system. However, Beardsley is silent as to the asynchronous streams of data.

Applicant respectfully asserts that nowhere does the combination of Schutzman, Duyanovich and Beardsley teach, disclose or suggest the present invention as recited in independent Claims 1, 12, 14 and 20, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Schutzman, Duyanovich and Beardsley also does not teach or suggest the additional claimed features

of the present invention as recited in Claims 3, 4 and 6 dependant on allowable base Claim 1, Claim 13 dependant on allowable base Claim 12, Claim 16 dependant on allowable base Claim 14, and Claim 22 dependant on allowable base Claim 20. Therefore, Applicant respectfully submits that Claims 3, 4, 6, 13, 16 and 22 overcome the rejection under 35 U.S.C. § 103(a), and are in a condition for allowance as being dependent on allowable base claims.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Schutzman in view of Duyanovich, and further in view of United States Patent 5,812,398 by Nielson, hereinafter referred to as the "Nielson" reference. Claim 5 is dependent on independent Claim 1. Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claim 5 is not unpatentable over Schutzman in view of Duyanovich, further in view of Nielson, for the following rationale.

Applicant respectfully asserts that the combination of Schutzman, Duyanovich and Nielson does not teach, describe or suggest the invention as claimed. As described above, Schutzman teaches a system where multiple streams are synchronously transferred between corresponding pairs of storage devices and backup devices and Duyanovich teaches the undesirability of the use of asynchronous data transmissions.

Moreover, the combination of Schutzman, Duyanovich and Nielson fails to teach or suggest this claim limitation because Nielson does not overcome the shortcomings of Schutzman and/or Duyanovich. Nielson, alone or in combination with Schutzman and Duyanovich, does not teach, disclose, or suggest transmitting a plurality of asynchronous streams to a backup database, as clamed. Applicant understands Nielson to teach a method and system for escrowed backup of hotelled [sic] World Wide Web sites. However, Nielson is silent as to the asynchronous streams of data.

Applicant respectfully asserts that nowhere does the combination of Schutzman, Duyanovich and Nielson teach, disclose or suggest the present invention as recited in independent Claim 1, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Schutzman, Duyanovich and Nielson also does not teach or suggest the additional claimed features of the present invention as recited in Claim 5 dependant on allowable base Claim 1. Therefore, Applicant respectfully submits that Claim 5 overcomes the rejection under 35 U.S.C. § 103(a), and is in a condition for allowance as being dependent on an allowable base claim.

Claims 8, 9, 17, 18, 23 and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 6,085,298 by Ohran, hereinafter referred to as the "Ohran" reference, in view of Schutzman.

Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claims 8, 9, 17, 18, 23 and 24 are not unpatentable over the combination of Ohran and Schutzman in view of the following rationale.

Applicant respectfully directs the Examiner to independent Claim 8 that recites that an embodiment of the present invention is directed to (emphasis added):

> A method of performing automatic recoveries on an archived database, comprising the steps of:
> comparing files residing on an operational database to files residing on a backup database;
> determining whether there are any missing files by checking for files which exist on the operational database and which do not exist on the backup database;
> recopying files from the operational database over to the backup database which are missing;
> determining whether there are any corrupted files by checking for files which have a different size on the operational database as compared to corresponding file residing on the backup database;
> recopying files from the operational database to the backup database which have become corrupted, <u>wherein the automatic recovery process is run by a program automatically in the background without requiring initiation and is run independent of a complete system backup</u>.

Independent Claims 17 and 23 recite similar limitations. Claim 9 that depends from independent Claim 8, Claim 18 that depends from independent Claim 17, and Claim 24 that depends from independent Claim 23 provide further recitations of features of the present invention.

The combination of Ohran and Schutzman does not teach a method of performing automatic recoveries on an archived database by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. For instance, Ohran and these embodiments of the claimed invention are very different. Applicant understands Ohran to teach a system and method for backing up a primary storage device to a backup storage device (col. 5, lines 24-27). Specifically, Ohran teaches a backup system that determines the difference between data located on the primary storage device and the backup storage device, and backs up only the changed data (col. 5, lines 30-40). In particular, this determination is performed in conjunction with performing a system backup.

With reference to Figure 3 of Ohran, a block diagram of a backup system is shown. The backup system includes backup system processing block 60 and backup storage device 24. Backup system processing block 60 receives data, processes the data (as explained in Figure 10 of Ohran), and then stores the data on backup storage device 24 (col. 16, lines 13-20). In particular, the processing of the data as performed at backup system processing block 60 is performed in conjunction with the initiation of a backup.

With reference to Figure 10 of Ohran, at steps 214 and 216 it is identified whether a backup is being initiated (col. 29, lines 41-43). Ohran

describes in detail various modes for initiating a backup (col. 20, lines 20-61). In particular, Applicant respectfully asserts that Ohran teaches that a backup must be initiated, and that the processing as performed at backup system processing block 60 must be performed in conjunction with a complete backup.

In contrast, embodiments of the claimed invention are directed towards a method of performing automatic recoveries on an archived database that is run independent of a complete system backup, as claimed. In particular, the automatic recovery process is not a system backup, as described in the Ohran reference. In particular, as described in the present specification, the automatic recovery process "detects files on the backup database which may have been accidentally deleted or corrupted by comparing file systems of the host database to that of the backup database." These files are then recopied from the host database to the backup database. Specifically, only those files that are missing or corrupted are recopied; this is performed independent of a system backup.

A system backup is a time-consuming, computationally intensive task. In general, complete system backups are performed at a relatively low frequency (e.g., once a day, once a week) depending on the amount of data requiring backup. In contrast, an automatic recovery process is a relatively quick task that can be performed at a very high frequency (e.g., every second)

because very little data actually gets recopied, only the corrupted or missing data.

Applicant respectfully asserts that Ohran in particular does not teach, disclose, or suggest a method of performing automatic recoveries on an archived database, as clamed. On the contrary, as Ohran teaches a backup that must be initiated in conjunction with comparing data, Applicant respectfully asserts that Ohran teaches away from such a configuration.

Moreover, the combination of Ohran and Schutzman fails to teach or suggest the present invention as claimed because Schutzman does not overcome the shortcomings of Ohran. Schutzman, alone or in combination with Ohran, does not show or suggest a method of performing automatic recoveries by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. As described above, Schutzman teaches a system where multiple streams are synchronously transferred between corresponding pairs of storage devices and backup devices. Moreover, Schutzman teaches that the backup discovery phase is initiated in response to receiving a user input of a filename (col. 15, lines 55-62). In particular, Schutzman requires a user to initiate the backup process.

In contrast, as described above, embodiments of the claimed invention are directed towards a method of performing automatic recoveries on an archived database, as claimed. Applicant respectfully asserts that backup as described in the Schutzman reference requires initiation by a user, thereby teaching away from the invention as claimed.

Schutzman does not teach, disclose, or suggest a method of performing automatic recoveries by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. On the contrary, Schutzman teaches away from such a configuration, as Schutzman requires user initiation. In view of this claim limitation not being shown or suggested in Schutzman, in combination with the above arguments, Applicant respectfully submits that independent Claims 8, 17 and 23 overcome the cited references and are therefore allowable over the combination of Ohran and Schutzman.

Applicant respectfully asserts that nowhere does the combination of Ohran and Schutzman teach, disclose or suggest the present invention as recited in independent Claims 8, 17 and 23, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Ohran and Schutzman also does not teach or suggest the additional claimed features of the present invention as recited in Claim 9 dependant on allowable base Claim 8, Claim 18 dependant on

allowable base Claim 17, and Claim 24 dependant on allowable base Claim

23. Therefore, Applicant respectfully submits that Claims 9, 18 and 24

overcome the rejection under 35 U.S.C. § 103(a), and are in a condition for

allowance as being dependent on allowable base claims.

Claims 10 and 19 are rejected under 35 U.S.C. § 103(a) as being

unpatentable over Ohran in view of Schutzman, and further in view of Beardsley.

Claim 10 is dependent on independent Claim 8, and Claim 19 is dependent on

independent Claim 17. Applicant has reviewed the cited references and

respectfully submits that the embodiments of the present invention as recited

in Claims 10 and 19 are not unpatentable over Ohran in view of Schutzman,

further in view of Beardsley, for the following rationale.

Applicant respectfully asserts that the combination of Ohran, Schutzman

and Beardsley does not teach, describe or suggest the invention as claimed.

As described above, Ohran teaches a backup that must be initiated in

conjunction with comparing data and Schutzman teaches that a user is

required to initiate the backup process.

The combination of Ohran, Schutzman and Beardsley fails to teach or

suggest this claim limitation because Beardsley does not overcome the

shortcomings of Ohran and/or Schutzman. Beardsley, alone or in combination

with Ohran and Schutzman does not teach, disclose, or suggest a method of

performing automatic recoveries by a program automatically in the background without requiring initiation and that is run independent of a complete system backup, as claimed. Applicant understands Beardsley to teach a peer-to-peer backup system. In particular, the peer-to-peer backup system as taught is not run independent of a complete system backup.

Applicant respectfully asserts that nowhere does the combination of Ohran, Schutzman and Beardsley teach, disclose or suggest the present invention as recited in independent Claims 8 and 17, and that this claimed subject matter is thus in a condition for allowance. Therefore, Applicant respectfully submits that the combination of Ohran, Schutzman and Beardsley also does not teach or suggest the additional claimed features of the present invention as recited in Claim 10 dependant on allowable base Claim 8, and Claim 19 dependant on allowable base Claim 17. Therefore, Applicant respectfully submits that Claims 10 and 19 overcome the rejection under 35 U.S.C. § 103(a), and are in a condition for allowance as being dependent on allowable base claims.

## CONCLUSION

Based on the arguments presented above, Applicant respectfully asserts that Claims 1-24 overcome the rejections of record and, therefore, Applicant respectfully solicits allowance of these Claims.

The Examiner is invited to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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